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| 10/033,457      | 12/27/2001  | Dennis E. Smith      | 82987AEK            | 8364             |

7590 07/01/2005

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| EXAMINER |
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|          |              |
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| ART UNIT | PAPER NUMBER |
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1772

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/033,457

Applicant(s)

SMITH ET AL.

Examiner

Walter B. Aughenbaugh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,7-19,21,22,24-40,42 and 43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7-19,21,22,24-40,42 and 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 29, 2005 has been entered.

### ***Acknowledgement of Applicant's Amendments***

2. The amendments made in claims 1, 21 and 42 in the Amendment filed April 29, 2005 (Amdt. E) have been received and considered by Examiner.

## ***WITHDRAWN REJECTIONS***

3. The 35 U.S.C. 103(a) rejections of claims 1, 2, 5, 7-19, 21, 22, 24-40, 42 and 43 that were repeated in paragraphs 4-7 of the previous Office Action mailed January 31, 2005 have been withdrawn due to Applicant's amendments in Amdt. E.

## ***NEW OBJECTIONS***

### ***Specification***

4. The amendment filed April 29, 2005 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the recitation of claims 1, 21 and 42 that the microbeads are free of colorant. Page 11, lines 11-15 of the specification states that the invention "permits the use or addition of a plurality of organic and inorganic materials such as fillers,

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pigments...” and that these additives “may be incorporated into the matrix phases [or] into the dispersed phases”: the microbeads are a dispersed phase, and pigments are colorants.

Furthermore, page 14, lines 1-3 explicitly states that ingredients such as pigments “tend to remain on the surfaces of the microbeads”, and the microbeads are therefore not free of colorant.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***NEW REJECTIONS***

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1, 21 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The recitation of claims 1, 21 and 42 that “the microbeads are free of colorant” constitutes new matter. Page 11, lines 11-15 of the specification states that the invention “permits the use or addition of a plurality of organic and inorganic materials such as fillers, pigments...” and that these additives “may be incorporated into the matrix phases [or] into the dispersed phases”: the microbeads are a dispersed phase, and pigments are colorants. Furthermore, page 14, lines 1-3 explicitly states that ingredients such as pigments “tend to remain on the surfaces of the microbeads”, and the microbeads are therefore not free of colorant.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 21 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "on exposure to UV light of 50 Klux for one week" renders claims 1, 21 and 42 indefinite because the scope of the claim cannot be ascertained since the recitation "on exposure to UV light of 50 Klux for one week" is a conditional limitation: the claim recites that the change in  $b^*$  value is less than or equal to 0.2 "on exposure to UV light of 50 Klux for one week", but does not require that the article be "expos[ed] to UV light of 50 Klux for one week".

In further regard to claims 1, 21 and 42, the use of "CIELAB value" in the claims renders the claims indefinite since CIELAB is a tradename. Since the computer programs associated with trademarks and tradenames may change with time, the specification must specify the nature of the  $b^*$  value.

***Claim Rejections - 35 USC § 102***

9. Claims 1, 2, 5, 7, 9-17, 21, 22, 24-26, 28-36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Maier et al.

In regard to claims 1, 2, 5, 7, 17, 21, 22, 24-26, 36 and 39, Maier et al. teach a shaped article such as a film, sheet, bottle (a container), tube, fiber or rod having a continuous first polymer phase having dispersed therein microbeads of a crosslinked second polymer that are bordered by void space (col. 1, lines 15-19 and col. 7, line 1). Maier et al. teach that acrylic acid, methyl acrylate or methyl methacrylate is a typical monomer for making the crosslinked second polymer for making the microbeads (col. 7, lines 47-52 and Examples 15-18 and 23-26 and col.

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17, lines 35-45); the monomers from which the second polymer is derived, acrylic acid, methyl acrylate or methyl methacrylate, therefore, comprise less than 10 wt% styrenic monomers and less than one wt% styrenic monomers as claimed in claims 2 and 22 (i.e. 0 wt% styrenic monomers). Note that acrylic acid, methyl acrylate and methyl methacrylate are acrylic monomers (and that methyl methacrylate is a methacrylic monomer in regard to claim 24), as acrylates are polymers of acrylic acid or its esters, as evidenced by *Hawley's Condensed Chemical Dictionary*. The compositions taught by Maier et al. have superior thermal stability (col. 3, lines 9-11). In regard to the recitation of claim 21 that the microbeads are made from acrylic crosslinking monomers, Maier et al. teach that the microbeads are made from methyl methacrylate monomers (col. 7, lines 47-49 and Examples 15-18 and 23-26 and col. 17, lines 35-45), which are acrylic crosslinking monomers. The recitation "experiencing a 2% weight loss above 270°C" defines thermally stable as experiencing a weight loss of less than 2% at temperatures below 270°C; since Maier et al. teach the shaped article comprising the microbeads as claimed by Applicant having the same composition as that claimed by Applicant, the microbeads of Maier et al. are necessarily thermally stable as Applicant has defined thermally stable. Maier et al. teach that the article is virtually free of the "yellowing with time" problem that "plagues cellulose-based papers" (col. 5, line 67-col. 6, line 2); therefore, Maier et al. teach that the microbeads have a change in CIELAB value b\* of less than 0.2 towards yellowness on exposure to UV light of 50 Klux for one week. Maier et al. teach that the microbeads are free of colorant (col. 1, lines 19-21).

In regard to claims 9-12 and 28-31, Maier et al. teach that the microbeads have a size of about 0.1-50 micrometers, that the microbeads are present in an amount of about 5-50% by

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weight based on the weight of the first polymer and that the voids occupy about 2-60% by volume of the shaped article (col. 4, lines 60-65).

In regard to claims 13 and 32, Maier et al. teach that the polymeric microbeads are coated with a slip agent (col. 12, lines 51-53).

In regard to claims 14-16 and 33-35, Maier et al. teach that the first polymer is a polyester (col. 6, lines 12-17) or a polyolefin such as polypropylene (col. 6, lines 52-53). Maier et al. teach that poly(ethylene terephthalate), which may be modified by small amounts of other monomers, is especially preferred as the first polymer (col. 6, lines 44-46).

***Claim Rejections - 35 USC § 103***

10. Claims 18, 19, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maier et al.

Maier et al. teach that methyl methacrylate is a preferred monomer for making the crosslinked polymer (col. 7, lines 47-55) and that the crosslinked polymer is crosslinked using a crosslinking agent (col. 7, lines 1-2 and 43-46). Maier et al. fail to explicitly teach that the second polymer is derived from monomers comprising more than 20 wt% of crosslinking monomer. Maier et al. further disclose that the polymer of the microbeads is crosslinked to the extent of having a resiliency or elasticity at orientation temperatures of the matrix polymer such that a generally spherical shape of the crosslinked polymer is maintained after orientation of the matrix polymer (col. 4, line 68-col. 5, line 4 and col. 13, lines 21-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the concentration of the crosslinking agent (i.e the crosslinking monomer as claimed) of Maier et al. in order to achieve the optimal resiliency or elasticity at orientation temperatures of the matrix

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polymer depending on the monomer used as the monomer from which the second polymer is derived and depending on the particular desired end user-result, in the absence of unexpected results.

11. Claims 8 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maier et al. in view of Saito et al.

Maier et al. teach the article as discussed above. Maier et al. fail to teach that the microbeads comprise a copolymer derived from methylmethacrylate and 1,6-hexanediol diacrylate or from methylmethacrylate and trimethylol propane triacrylate. Saito et al., however, disclose a transfer sheet having a thermally transferable protective layer (item 12, Figures 1-3) and optionally a protective layer (item 12a, Figure 3) having an acrylic resin to improve the fastness properties, such as rubbing fastness and scratch fastness, of the protective layer/s (col. 7, lines 17-27). Saito et al. disclose that methylmethacrylate, 1,6-hexanediol diacrylate and trimethylol propane triacrylate are suitable acrylic monomers (col. 7, lines 44-46 and col. 8, lines 25-26 and lines 34-35). Saito et al. disclose the use of the disclosed acrylic monomers as a mixture of two or more of the monomers; therefore, Saito et al. disclose the use of copolymers derived from methylmethacrylate and 1,6-hexanediol diacrylate or from methylmethacrylate and trimethylol propane triacrylate. Therefore, one of ordinary skill in the art would have recognized to have used a copolymer of methylmethacrylate and 1,6-hexanediol diacrylate or of methylmethacrylate and trimethylol propane triacrylate as the acrylic polymer of Maier et al. in order to improve the fastness properties, such as rubbing fastness and scratch fastness, of the article of Maier et al. as taught by Saito et al.



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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a copolymer of methylmethacrylate and 1,6-hexanediol diacrylate or of methylmethacrylate and trimethylol propane triacrylate as the acrylic polymer of Maier et al. in order to improve the fastness properties, such as rubbing fastness and scratch fastness, of the article of Maier et al. as taught by Saito et al.

12. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maier et al. in view of Hart et al.

Maier et al. teach the article as discussed above. Maier et al. fail to teach that the shaped article is coated with a slip agent comprising silica or alumina. Hart et al., however, disclose a thermal transfer printing receiver sheet (col. 3, lines 6-7) that is coated with a coating that contains a silica slip agent to improve the slip, anti-blocking and general handling characteristics of the sheet (col. 9, lines 37-51). Therefore, one of ordinary skill in the art would have recognized to have coated the article with a slip agent in order to improve the slip, anti-blocking and general handling characteristics of the article as taught by Hart et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have to have coated the article with a slip agent in order to improve the slip, anti-blocking and general handling characteristics of the article as taught by Hart et al.

13. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maier et al. in view of Harrison et al.

In regard to claim 42, Maier et al. teach a sheet having a continuous first polymer phase having dispersed therein microbeads of a crosslinked second polymer that are bordered by void space (col. 1, lines 15-19 and col. 7, line 1). Maier et al. teach that acrylic acid, methyl acrylate

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or methyl methacrylate is a typical monomer for making the crosslinked second polymer for making the microbeads (col. 7, lines 47-52 and Examples 15-18 and 23-26 and col. 17, lines 35-45); the monomers from which the second polymer is derived, acrylic acid, methyl acrylate or methyl methacrylate, therefore, comprise not more than 10 wt% styrenic monomer (i.e. 0 wt% styrenic monomers). Note that acrylic acid, methyl acrylate and methyl methacrylate are acrylic monomers, as acrylates are polymers of acrylic acid or its esters, as evidenced by *Hawley's Condensed Chemical Dictionary*. The compositions taught by Maier et al. have superior thermal stability (col. 3, lines 9-11). In regard to the recitation that the microbeads are thermally stable meaning that the temperature at which the microbeads experience a 2% weight loss is above 270°C, Maier et al. teach the sheet comprising the microbeads as claimed by Applicant having the same composition as claimed by Applicant, and therefore, the microbeads of Maier et al. are necessarily thermally stable where thermally stable means that the temperature at which the microbeads experience a 2% weight loss is above 270°C. Maier et al. teach that the article is virtually free of the "yellowing with time" problem that "plagues cellulose-based papers" (col. 5, line 67-col. 6, line 2); therefore, Maier et al. teach that the microbeads have a change in CIELAB value  $b^*$  of less than 0.2 towards yellowness on exposure to UV light of 50 Klux for one week. Maier et al. teach that the microbeads are free of colorant (col. 1, lines 19-21).

Maier et al. fail to teach that the sheet is a dye diffusion thermal transfer dye receiving sheet.

Harrison et al. disclose a dye diffusion thermal transfer dye receiving element comprising a support comprising a continuous oriented polymer matrix having dispersed therein microbeads of a cross-linked polymer which are at least partially bordered by void space (col. 2, lines 23-31).

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Harrison et al. disclose that the dye-receiving element is shaped in sheet form (col. 9, lines 58-60). Therefore, one of ordinary skill in the art would have recognized to have used the sheet of Maier et al. as a dye diffusion thermal transfer dye receiving sheet since it is well known to use a sheet comprising a continuous polymer matrix having dispersed therein microbeads of a cross-linked polymer which are at least partially bordered by void space such as the sheet of Maier et al. as a dye diffusion thermal transfer dye receiving sheet as taught by Harrison et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the sheet of Maier et al. as a dye diffusion thermal transfer dye receiving sheet since it is well known to use a sheet comprising a continuous polymer matrix having dispersed therein microbeads of a cross-linked polymer which are at least partially bordered by void space such as the sheet of Maier et al. as a dye diffusion thermal transfer dye receiving sheet as taught by Harrison et al.

### ***Response to Arguments***

14. Applicant's arguments presented on pages 7-10 of Amdt. E regarding the 35 U.S.C. 103 rejections that were repeated in the previous Office Action mailed January 31, 2005 are moot due to the withdrawal of these rejections in this Office Action.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter B. Aughenbaugh whose telephone number is 571-272-1488. The examiner can normally be reached on Monday-Thursday from 9:00am to 6:00pm and on alternate Fridays from 9:00am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Walter B. Aughenbaugh

06/27/05

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1772

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